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ABSTRACT

This study tests the influence of various combinations of housing environments with both the participation and nonparticipation of disadvantaged children in a special enrichment program. Three hypotheses are put forth: (1) children living in public housing will exhibit greater growth and development than children living in substandard housing; (2) children in Head Start programs will exhibit greater growth and development than control children; and (3) there will be no interaction effects. Two predictions derived from the hypotheses are made: (1) children living in better housing and participating in Head Start programs will exhibit greater growth and development than children in other groups, and (2) children living in substandard housing and not enrolled in Head Start programs will exhibit the least amount of growth and development. Only the second hypothesis was confirmed indicating Head Start's tremendous impact on the participating children. Three conclusions are drawn from this study: (1) Head Start, as compared with the housing environment, can produce more dramatic immediate results; (2) the significance of the housing environment as a factor in human growth and development remains inconclusive and needs further research for verification; and (3) the housing environment, rather than acting as a direct controlling influence, may simply provide the setting which encourages or inhibits the influence of other variables. (Author/AM)

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THE EFFECTS OF PROJECT HEAD START AND DIFFERENTIAL
HOUSING ENVIRONMENTS UPON CHILD DEVELOPMENT*

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THE EFFECTS OF PROJECT HEAD START AND DIFFERENT L
HOUSING ENVIRONMENTS UPON CHILD DEVELOPMENT*

The subjects of child development and housing have received a considerable amount of attention through scientific study and research by professionals within each of these respective fields. The research studies conducted within these two spheres, however, have met infrequently at tangent points of mutual interest or interrelated problems.

As professionals interested in housing and others interested in child development approach the problems of poverty, the pragmatic goals of each merge in the search for greater understanding and for solutions to the multitude of problems which poverty presents.

Numerous research studies have dealt with the influence of various aspects of the child's total environment but the role of the physical dwelling has been neglected for the most part. The research studies which have sought to identify causal relationships between housing and its effects on people have been concerned largely with the effects of housing on disease and health or on patterns of social interaction. Very few have touched upon the impact of the housing environment upon human development or more particularly, the growth and development of the younger child.

There have been numerous social experiments in providing better housing (e.g. public housing projects) in hopes of eliminating the social problems of particularly difficult urban areas. The failure of many of these indicates the limited improvement that new housing

alone can be expected to produce in people conditioned by years of exposure to patterns of living in a deteriorated physical and social environment. While good housing alone does not guarantee good behavior, bad housing does appear to contribute to family disorganization and to other subsequent social ills. This suggests the possibility that housing is a necessary but not a sufficient factor to produce significant social change. Housing is only one factor in a myriad of factors which exerts its influence upon people, but bad housing may be pivotal in the mutually reinforcing handicaps which are characteristic of poverty.

Michael Harrington has referred to public housing projects as "new slums",¹ an appellation which pointedly implies the lack of consideration often given to social problems even in a new housing environment. If improved housing is to maximize its contribution toward the elimination of physical and social slums, and thus reduce the impact of poverty, a possible solution is to initiate special programs designed to produce social change in conjunction with the provision of an improved housing environment.

Project Head Start, one of the weapons in the War on Poverty, provided the opportunity to examine the combined influence of better housing and a specially designed program to improve the social and educational level of a particular segment of the low income population. Project Head Start itself, a program for the disadvantaged preschool child, was and is an attempt to probe the possibility of penetrating the vicious cycle of poverty at a potentially vulnerable

spot -- the time when a new generation of the economically and socially deprived make their debut into the world outside the home. It is generally recognized that, on the average, children from deprived backgrounds start to school behind their more economically fortunate age mates in such important skills as language, problem solving ability, and apparent desire to learn. Project Head Start was designed to supplement this generally deficient background and to facilitate and accelerate the achievement of preschool children who have been victims of factors beyond their control which tended to impair and retard educational development.

The Head Start Program provided a "natural laboratory" situation for scientific study of the relationship between the housing environment and child development. Not only were there conditions which permitted the examination of the development of children from different housing environments, but it was possible under experimental conditions to test the influence of various combinations of housing environments with both participation and non-participation of disadvantaged children in the special enrichment program.

Research Design and Objectives

This research, funded through a grant from the Office of Economic Opportunity, included an inspection and appraisal of the dwelling and physical environment of 208 Negro preschool children in Kansas City, Missouri; an interview with the mother or guardian of each child and the collection of pertinent family demographic data and information on

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experiences of the child; and the administration of a special Pre-school Inventory test to each child. The field work took place in conjunction with a "follow-through" Head Start Program running from March 1 through June 10, 1966.

All 208 children, both boys and girls approximately 5 years of age, came from economically disadvantaged families; each met the general requirements for participation in the Head Start Program. Half the sample families lived in structurally sound public housing projects while the other half lived in substandard slum housing. Half of each of these two housing environment groups received the experimental treatment, participation in Head Start. Thus, there were four groups of 52 children involved in the study:

- | | |
|---------------------------|--|
| Group 1
(experimental) | - 52 children living in public housing
and enrolled in Head Start. |
| Group 2
(experimental) | - 52 children living in substandard
(slum) housing and enrolled in Head
Start. |
| Group 3
(control) | - 52 children living in public housing
and not enrolled in Head Start. |
| Group 4
(control) | - 52 children living in substandard
(slum) housing and not enrolled in
Head Start. |

Sample Selection

The study population of preschool children was drawn from school districts within the "poverty target area" which had been identified by the Kansas City Human Resources Corporation. All of the Negro children in Head Start and living in public housing formed group 1. The children in group 2 were randomly drawn from those enrolled in

Head Start and known to be living in poorer neighborhoods. The control children, groups 3 and 4, were randomly drawn from public school lists of children (screened by address and type of housing) who would also be entering kindergarten in the coming fall. Most of the control children would have been in Head Start had the program been larger. Many, in fact, did participate in the following summer program.

The Hypotheses

Implicit in the experimental research design are three basic hypotheses.

1. As a function of housing quality, children living in public housing will exhibit greater growth and development than children living in substandard housing.
2. As a function of participation in Head Start, children in Head Start will exhibit greater growth and development than the control children.
3. There will be no interaction effects.

The first two of these hypotheses taken together lead to a prediction for the two extreme groups of the four being examined in this study. Specifically:

- A. Children living in better housing and participating in Head Start (group 1) will exhibit greater growth and development than the other three groups.
- B. Children living in substandard housing and not enrolled in Head Start (group 4) will exhibit the least amount of

growth and development.

It is appropriate to first acquaint the reader with the nature of the housing environments and relevant child and family characteristics. These data were collected primarily to insure the comparability of the study groups or to make known differences among the groups.

An Analysis of Group Characteristics

The data for this study were collected by the use of two research instruments. The first of these, a Field Survey Instrument, was divided into two parts. Data concerning the family and the subject child were recorded on one part and on the other was recorded the inspection and evaluation of the physical dwelling and neighborhood.

The second instrument used was the Preschool Inventory, a test developed specifically for use with Project Head Start children to measure the level of achievement in attributes necessary for normal progress in school.²

In comparing the general characteristics of the four groups, the mean value for each variable in each of the four groups was computed. Among other statistical treatments, Duncan's "New Multiple Range Test"³ was used to separate the variable means among groups at or beyond the 5% level of significance.

Housing and Neighborhood Quality

Each dwelling unit was visually inspected immediately before or after the interview with the child's mother. This inspection

followed a schedule which included major and minor structural items, both inside and outside.⁴ The dwelling inspection items were tallied to place the dwelling structure in one of four housing quality classifications: poor, fair, good, and excellent.

An attempt was made to obtain at least a cursory appraisal of a sample of the immediate neighborhood around each dwelling. Land use was noted and structural condition was recorded simply as dilapidated, deteriorating, or sound.

There were, as expected, marked and significant differences in the housing and neighborhood quality ratings between public housing groups and those from slums. A significant and unanticipated difference was discovered which favored somewhat better housing and neighborhood quality for the experimental slum children compared to that of the slum control group. The two public housing group ratings were nearly identical.

Over-crowding, by the one person per room standard, was common for all groups, but the difference between housing types was significant with more crowding in the substandard housing. The extent of the over-crowding can be seen in the following:

Group	Ave. no. of persons per room
1	1.20
2	1.41
3	1.23
4	1.46

Examining another aspect of crowding, the number of persons sleeping in the same room as the subject child, a similar pattern was found. The two public housing groups were quite similar as were the two

slum groups, and the difference between the two housing categories was significant.

Family Characteristics

Household size. The age, sex, and relationship of each person living in the household was recorded. The tally of the total number of persons in the households of each group indicated that those in substandard housing had larger households than those in public housing and this difference was statistically significant. The differences between the groups with like housing were quite small. The factors creating the differences between public housing and slum housing were undoubtedly the policies of the Kansas City Public Housing Authority and the size units available in public housing.

Since family size is known to be negatively correlated with intelligence and academic achievement,⁵ this variable was further examined through analysis of co-variance to determine its possible influence upon test results. This analysis indicated that when family size was controlled, the same relationships among housing type-Head Start combinations were found to exist as those detected with analysis of variance which ignored family size differences.

Marital status and father absent. Although the exact marital status of each respondent was recorded, categories were collapsed so that there was a simple dichotomous relationship of married versus all other marital conditions in which there was no father in the home (i.e. single, widowed, divorced and separated). The totals on this variable indicated some differences favoring those children in slum

families with fewer father absent homes. However, an analysis of co-variance for this variable and total test scores, which controlled ~~for~~ father absent differences among groups, indicated that these differences had no significant influence on test results in this study. The statistically significant differences among other family characteristics variables were few. Family income and rent were very similar among the groups although when utility bills were added to housing costs, those in slum housing paid considerably more for their shelter, 30% of their income, while those in public housing spent about 21%.

The data on employment and education of both fathers and mothers indicated that the four groups were comparable.

The variable of mobility (the length of time the family had lived in their current dwelling and the number of times moved within the previous 5 years) was examined and it was found that those in slum housing were somewhat less mobile, but only the relative stability of group 2 produced statistical significance.

Activities within the home and child experiences. A number of variables relating to childhood experiences such as visiting patterns, television watching, reading, and child rearing practices were examined to further test the comparability of children in the four groups. Few differences were found with one exception. Slum families read to their preschool children with significantly greater frequency than did parents in public housing.

While there were some differences among groups, as has been noted, the predominant finding was that, aside from housing quality, the four groups were remarkably similar.

Child Growth and Development

Each child selected for study was given the Preschool Inventory test developed by Dr. Bettye M. Caldwell and Donald Soule.⁶ Originally, it was part of the research plan to administer both a "before" and "after" test to all children. Unfortunately, due to administrative difficulties, it was not possible to give the "before" tests. In order to proceed with the study, two primary assumptions were made.

First, prior to Head Start, the experimental children were essentially comparable with their control group counterparts. A reappraisal of sample selection procedures affirmed that the groups were as nearly alike as the preselection could make them and a re-examination of the field instruments provided the confidence that differences in housing quality, family characteristics, experiences of the child, and adult attitudes toward housing could be detected.

Second, any difference in test scores between groups with like housing environments would reflect the influence of the Head Start program. Likewise, any difference in test scores between the two control groups and between the two experimental groups would reflect the influence of the housing environment.

Thus, despite unfortunate developments which forced modification of the original research design, the study was able to proceed with one test, an "after" test being administered to all children during a six week period beginning late in April and ending the first week in June. Testing proceeded in each of the four groups throughout this period.

Achievement Level

In order to have some general idea of the achievement level of the study children, it was useful to compare the group mean test scores with the norms compiled by Dr. Caldwell.⁷ Of the study children, those having participated in Head Start definitely were above the norms for other lower class children while the control children were definitely below. If the test scores are compared with norms for middle class children, all the study children would have no higher than a percentile rank of 5.

Test Score Results

Examination of the total test score means (Table I) indicates that the experimental groups achieved nearly equal scores with group 2 (slum) having a slight edge over group 1 (public housing). Both experimental groups scored considerably higher than the controls. Unlike the experimentals, there was a marked difference between the two control groups with public housing children achieving the higher scores.

(Table I about here)

An analysis of variance was computed to evaluate the significance of relationships among the groups and to test the study hypotheses. Table II presents the relationships among tests results.

(Table II about here)

The first hypothesis which stated that as a function of housing quality, children living in public housing would exhibit greater growth and development was not confirmed. The difference between the combined

TABLE I
TOTAL TEST SCORE MEANS

	<u>Experimental</u>	<u>Control</u>
Public Housing	51.98	38.21
Slum Housing	53.96	32.88

TABLE II
TWO-WAY ANALYSIS OF VARIANCE WITH INDICATED
STATISTICAL SIGNIFICANCE FOR PRESCHOOL
INVENTORY TOTAL TEST SCORES

Source	DF	MS	Sig.
Pub. Housing Vs. Slum	1	145.60	
Experimental Vs. Control	1	15,785.28	*
Interaction	1	694.23	*
Error	204	166.32	

scores for public housing children and those for slum children was not statistically significant.

The second hypothesis stating that as a function of participation in Head Start, children in Head Start would exhibit greater growth and development was positively confirmed. The difference between the scores of the experimental and the control children was highly significant on all parts of the test. There is no doubt that Head Start had tremendous impact upon the children fortunate enough to participate.

The third hypothesis predicting no interaction effects was not supported. The mean test scores indicate that interaction was due to the relatively higher scores of the slum housing experimental group and the public housing control group. The contribution to significant interaction of the unexpectedly high experimental slum children suggests that Head Start may have produced greater effects among those who had suffered the greater deprivation.

The higher scores for the public housing controls over the slum controls was predicted in a post hoc hypothesis: Housing groups which did not participate in Head Start will differ in growth and development with public housing being superior. This difference was statistically significant (beyond the .05 level).

It can also be seen from an inspection of the mean scores that the prediction that the combined effects of no Head Start and slum housing would produce the least amount of growth and development was confirmed and was significant. While, as has been indicated, the

basic hypothesis that the combined scores for public housing children would be higher than those of slum children was not supported, the fact that the control group in public housing did significantly better than its slum housing counterpart, suggests that housing quality did have some impact upon children's growth and development.

The related prediction that the combined effects of Head Start and better housing would produce higher scores for group 1 was not supported. The performance of slum children in Head Start was equal to those from public housing.

Two factors may have operated in producing these results. First, although group 2 children did live in substandard housing and were from deteriorating neighborhoods, the rating of their physical environment was significantly higher than that of the control group from the slums. To the extent that better housing can contribute to better child growth and development, this factor was important.

Second, Head Start may be capable of producing more marked results among those children who have suffered the greater deprivation. Since the experimental children from slums performed equally with those from public housing, while the difference between control groups was significant, there is support for this conclusion.

Within Group Analysis

Within each of the four groups, the families appeared to be highly homogeneous, and the experimental groups were quite comparable with their control counterparts. Would there be discernable

relationships within each group between certain environmental factors, family characteristics, or childhood experiences, which would significantly influence the test scores?

A product-moment correlation was computed for 63 variables in relation to test results within each of the four groups. Few significant relationships within the groups were found between test scores and pertinent variables in the housing environment, family characteristics, and child experiences.

It was found that over-crowding, particularly in the child's bedroom, was related to poorer test scores for control children, thus providing some evidence within the groups of dilatory environmental influence. Since the experimental groups did not show the same relationship, apparently these undesirable influences could be reduced through participation in Head Start.

The most important finding relative to family characteristics variables was that father absence had no apparent influence upon test results.

Of the child experience variables, the frequency of reading to the child emerged as most important, particularly for those children in Head Start. This finding suggested that through participation in Head Start, experiences with books and reading materials were more meaningful and profitable.

Overall, however, few relationships were found and few differences were evident among groups. This further supported the comparability of the four groups.

Within Group Ranking of Selected Variables

Following the analysis of within group correlations, a further within group analysis was conducted. This statistical procedure was a stepwise regression analysis on the means of 23 selected variables. With the selected variables arranged in rank order of importance, Spearman's rank correlation coefficient formula was used to determine the rank order correlation among order of entry for four combinations of the study groups: the experimental groups (1 and 2); the control groups (3 and 4); the public housing groups (1 and 3); and the sub-standard housing groups (2 and 4). The results of this analysis indicated that there were few correlations in the ranked order of the above pairings, however, for the purposes of this study, the analysis was fruitful. The lack of significant patterns in the ranking of variables illustrated that complex interrelationships existed among variables. These variables may act and interact to contribute to, or hinder, the development of the pre-school child. Moreover, the discovery of the lack of consistent relationships in the rankings among the four groups becomes highly important in suggesting that each group possessed some unique characteristic or characteristics which influenced its ranked ordering of the selected variables. The obvious unique feature was its particular combination of housing quality and experimental treatment (or non-treatment). This finding demonstrates that both the prime variables under investigation, housing and Head Start, were important in determining test score results. Since the impact of Head Start was clearly demonstrated while the evidence of

direct housing influence was inconclusive, the unique ordering of the variable rankings suggests that the housing environment provides more than simple physical limitations, but rather may be the conditioning variable which tends to influence the functioning of the milieu of variables within the total social environment.

Summary and Conclusions

It was the intent of the study to examine preschool children as they should represent a sensitive indicator of the influence which two contrasting housing environments may possess. The research design also made possible an evaluation of the effectiveness of Head Start. The following conclusions were drawn.

First: The enrichment program (Head Start), as compared with the housing environment, can produce the more dramatic immediate results which suggests that at least for the short term, the rarified atmosphere in Head Start of new experiences, nearly constant care and attention, and pleasant, stimulating surroundings can compensate for one further disadvantage of the "culturally disadvantaged," that of living in the slums.

Second: The significance of the housing environment, as a factor in human growth and development, remains inconclusive without the support of the "before" tests. The suggestive evidence on the impact and nature of the housing environment needs further research for varification.

Third: The study results suggest the way in which the housing

environment may exert its influence upon human development. Rather than acting as a direct controlling influence in a child's growth and development, the housing environment may simply provide the setting or the conditioning variable which encourages or inhibits the influence of other variables within the total social environment.

Footnotes

*Research conducted as part of a doctoral dissertation,
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